It's Complicated: Barriers to EAD Implementation

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A b s t r a c t

Eleven years after the release of Encoded Archival Description (EAD), archivists' reactions to it range from wholehearted acceptance to outright rejection. In the middle of this spectrum are archivists who decide to implement EAD but encounter obstacles in doing so. This paper reports the findings of a survey of sixteen such cases. It identifies barriers to implementation such as lack of staff and a gap between the technology needed to publish EAD and the skills of many archivists. It discusses solutions and recommends changing the emphasis of EAD training, using server-friendly software, and engaging consultants to bolster archivists' technology expertise.

Although Encoded Archival Description (EAD) has gained a great deal of credibility as an international data structure standard for encoding archival description since its release in 1996, a range of reaction to it still exists among archivists. Some archives wholeheartedly embrace EAD. They hold training sessions and host large-scale implementation projects. Their archivists publish in archival literature about their experiences, and, in general, spread the gospel of the positive good of EAD implementation for their repositories. Many of the seventy-eight institutions listed on the Society of American Archivists EAD Implementor website fit into this category.[1] Other archives reject EAD altogether, their archivists voicing concerns about the standard itself or its applicability to their institution's needs. Those institutions that implement EAD but encounter obstacles in doing so fall somewhere between these extremes, and I will focus on them in this paper.

What prevents archives from implementing EAD? Nine years ago, the answer was that the technology simply was not there. Jill Tatem found that the lack of affordable editing software and the lack of browsers capable of EAD display made

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[1] *EAD (Encoded Archival Description) Help Pages—Implementor Listing*, 2007, at http://www.archivists.org/saagroups/ead/implementors.html, accessed 18 February 2007.

it difficult to use EAD or to convince institutions to use it.[2] Today, inexpensive EAD authoring software such as Note Tab Pro fills this software gap and makes the creation of EAD code relatively straightforward. Web browsers now can render EAD's version of XML. The early literature also discussed the difficulty of learning EAD in isolation.[3] This problem has also been largely solved. Training workshops are readily available throughout the country. Tools such as Michael J. Fox's "EAD Cookbook" also make it much easier to learn and implement EAD.[4]

Today the answer to the question appears to be more complex. My initial discussions with archivists and librarians at the Wisconsin Historical Society and University of Wisconsin-Madison suggest two main barriers to implementing EAD: a lack of expertise in the server technology necessary to publish EAD on the Web, and the desire on the part of archivists to rewrite legacy finding aids before encoding them. I wanted to explore these hypotheses. It is beyond the scope of this paper to determine what obstacles actually prevent institutions wanting to implement EAD from doing so. I investigate here archivists' perceptions of obstacles and the characteristics of their institutions. I probe respondents' perceptions of actions that might remove these barriers, but do not study actual removal of such obstacles.

Elizabeth Yakel and Jihyun Kim also examined patterns of EAD adoption. They surveyed 399 people who took EAD classes from Research Library Group (RLG) or the Society of American Archivists (SAA) between 1993 and 2002, and examined the characteristics of adopters and nonadopters. While their study is descriptive, they speculate about causal factors for some issues.[5] They divided adopters and nonadopters based on self-identification rather than on validation data such as date of adoption, existence of an EAD website, or number of finding aids encoded. It is possible that of two institutions that had each encoded one finding aid and stalled, one might identify itself as a nonadopter and the other as an adopter.

To implement EAD fully requires completing a multistep path. The steps include establishing a workflow, establishing coding standards, encoding finding aids, developing Cascading Style Sheets (CSS) and Extensible Stylesheet Language Transformation (XSLT) style sheets to translate EAD's XML, setting up an EAD server, and finally publishing the encoded EAD finding aids to the Web. Somewhere along that path, some implementors hit bumps. Understanding these

[2] Jill Tatem, "EAD: Obstacles to Implementation, Opportunities for Understanding," *Archival Issues* 23 (1998): 155–69.

[3] Elizabeth H. Dow, "EAD and the Small Repository," *American Archivist* 60 (Fall 1997): 446–55.

[4] Michael J. Fox, "The EAD Cookbook 2002," *EAD Help Pages,* March 2004 at http://www.archivists.org/saagroups/ead/cookbookhelp.html, accessed 30 April 2007.

[5] Elizabeth Yakel and Jihyun Kim, "Adoption and Diffusion of Encoded Archival Description," *Journal of the American Society for Information Science and Technology* 56 (November 2005): 1427–37.

"bumps" will help archivists plan more knowledgeably their course of action for implementation and funding of EAD projects.

Barriers Past and Present

To understand the problems that archivists implementing EAD today might encounter, it is helpful to look at challenges faced by early implementors. Doing so allows us to put current problems in perspective—to see which barriers are longstanding and how some have been overcome.

Working in isolation and convincing administrators are the first problems identified by those implementing EAD. Elizabeth Dow says that her biggest problem in implementing EAD at the University of Vermont in 1996 was her insistence on working alone. It was not until she involved her IT staff that her project progressed.[6] Jennifer A. Marshall, who surveyed early implementors, says that EAD implementation case studies show that "it is especially important for archivists working with EAD to be able to articulate their goals and requirements to nonarchivists, particularly administrative and systems personnel."[7] Similarly, James M. Roth finds convincing administrators of the value of EAD to be a problem.[8]

The obvious antidote to isolation is collaboration, which could also be helpful in developing joint strategies to convince administrators of the need for EAD. Yet Tatem says that archivists lack a culture of collaboration. "Archivists do not have broad or deep habits of collaboration. Traditional archival dependence on 'do-it-yourself' solutions created from the ground up, repository by repository, works against the kind of cooperative approach that seems, in these early days, to make financial and technical sense for EAD implementation."[9] Collaboration with other institutions is crucial if an individual repository lacks in-house resources, according to Marshall.[10] In discussing the desire of many institutions to adhere to descriptive standards, a 1999 manual by the Society of American Archivists suggests, "For decision makers such as library and archives directors who have adopted this strategy, the standards-based, community-endorsed aspects of EAD provide a convincing rationale for its adoption."[11]

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[6] Dow, "EAD and the Small Repository," 452.

[7] Jennifer A. Marshall, "The Impact of EAD Adoption on Archival Programs: A Pilot Survey of Early Implementors," *Journal of Archival Organization* 1 (2002): 39.

[8] James M. Roth, "Serving Up EAD: An Exploratory Study on the Deployment and Utilization of Encoded Archival Description Finding Aids," *American Archivist* 64 (2001): 229.

[9] Tatem, "EAD: Obstacles to Implementation," 160.

[10] Marshall, "The Impact of EAD," 47.

[11] *Application Guidelines for Version 1.0 Encoded Archival Description (EAD) Document Type Definition (DTD), Version 1.0,* Technical Document No. 3 (Society of American Archivists and the Library of Congress, 1999), at http://www.loc.gov/ead/ag/agadmin.html, accessed 25 April 2008.

In addition to isolation and collaboration, Marshall and Roth identify problems of workflow within archives.[12] One of the greatest challenges Roth identified in his 2001 survey is that archivists find it difficult to allot the time to develop encoding routines and incorporate them into an institution's workflow. [13]

After determining how encoding would work within an organization, archivists must decide what finding aid content to encode. Concern about the quality or completeness of finding aids often causes archivists to rewrite legacy finding aids before EAD encoding. Marshall finds that "poor quality" of finding aids is a barrier to EAD implementation at some institutions.[14] Durham University Library, U.K., describes a common situation, "Durham's handlists tend to be highly detailed item level listings, done without any authority system or house style, only the most recent of which had been word processed."[15] Dennis E. Meissner partially fuels this desire to rewrite finding aids by suggesting that any institution contemplating adopting EAD first re-engineer its finding aid.[16] However, he admits, "The reengineered finding aid model described above carries some significant overhead."[17] Although he discusses how to ameliorate that overhead with automated templates and macros, the fact remains that rewriting finding aids to bring them to modern standards can be a daunting task. Says Farris Wahbeh, ". . . converting past finding aids to EAD might be a huge institutional barrier as opposed to creating them from scratch for new collections."[18] Yakel and Kim postulate, ". . . the EAD adoption decision may be contingent on the decision to invest in the conversion of outmoded access tools to modern finding aids or updating analog finding aids into digital documents."[19] Michele Tourney, however, sees the lack of any finding aids to be the obstacle, not the existence of old ones: ". . . when I started I had more than fifty collections (that were scattered throughout the library) and only TWO finding aids in any format (and these weren't even complete!). Not exactly the most ideal conditions under which to embark on an EAD project."[20]

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[12] Marshall, "The Impact of EAD," 47.

[13] Roth, "Serving Up EAD," 229.

[14] Marshall, "The Impact of EAD,"47.

[15] "Durham University Library," *EAD (Encoded Archival Description) Help Pages—Implementor Listing*, n.d., http://www.archivists.org/saagroups/ead/implementors/DurhamUniversityLibrary.html, accessed 18 February 2007.

[16] Dennis E. Meissner, "First Things First: Reengineering Finding Aids For Implementation of EAD," *American Archivist* 60 (Fall 1997): 372–87.

[17] Meissner, "First Things First," 386.

[18] Farris Wahbeh, *Archives and Archivists List,* 8 February 2007, http://forums.archivists.org/read/?forum=archives, accessed 8 February 2007.

[19] Yakel and Kim, "Adoption and Diffusion of Encoded Archival Description," 1435.

[20] Michele Tourney, *Archives and Archivists List*, 19 May 2004.

In addition to issues related to institutions and finding aids, several authors find the complexity of EAD itself to be a deterrent to implementation. Daniel Linke and others are concerned that EAD makes searches more complicated for users.[21] Tatem finds that archivists see EAD as too complex to be practical to use because of lack of inexpensive or easy-to-use encoding and viewing software. At the early stages of EAD's implementation, Web browsers could not be used to view EAD-encoded finding aids without converting them to HTML.[22] Another problem frequently cited in early literature is the complexity of *middleware,* defined as "Software that mediates the exchange of information between two applications or between an application and a network."[23] Dow says that server file management is time consuming, even with the support of her system staff.[24] Roth finds that locating technically competent staff and the technical aspects of launching finding aids on the Web to be major challenges for archivists trying to implement EAD. Fox suggests that unfamiliarity with SGML makes it harder to find contract staff to configure Web servers. He therefore advises repositories to participate in cooperative ventures for planning, procurement, and technical support.[25]

The "EAD Cookbook," first developed by Michael J. Fox in 1999, is one tool to help archivists solve some of the technical problems. It includes a reference manual, style sheets, and a suggested step-by-step implementation plan. In 2000, Christopher Prom evaluated the tool to determine how people were using the "Cookbook."[26] He found that learning the software, such as XSLT, necessary to publish EAD on the Web, is a major obstacle to implementation. Adding a search engine to an EAD website is "a challenge."[27] Fifty-six percent of his respondents encode finding aids but never publish them on the Internet. Yakel and Kim find that 25 percent of their respondents encode finding aids, but do not publish the EAD versions.

[21] Daniel Linke, "Is EAD dEAD?," presentation in the session "To EAD or Not To EAD—Is That Really the Question?," Society of American Archivists Annual Meeting, Washington, D.C., 31 August 2001.

[22] Tatem, "EAD: Obstacles to Implementation," 158.

[23] Richard Pearce-Moses, *A Glossary of Archival and Records Terminology* (Chicago: The Society of American Archivists, 2005), 65.

[24] Dow, "EAD and the Small Repository," 452.

[25] Michael J. Fox, "Implementing Encoded Archival Description: An Overview of Administrative and Technical Considerations," *American Archivist* 60 (Summer 1997): 332.

[26] Christopher J. Prom, "The EAD Cookbook: A Survey and Usability Study," *American Archivist* 65 (2002): 257–75.

[27] Prom, "The EAD Cookbook," 265.

Current EAD Implementor Trends

In addition to reviewing published EAD implementation research to identify past problems, I read the Society of American Archivists' *EAD Implementor* website, which contains links to narrative descriptions of how seventy-eight archives have or are planning to implement EAD. These descriptions tend to tell anecdotal success stories but seldom discuss problems encountered while implementing EAD.[28] Nonetheless, two trends are discernable in these website descriptions.

First, implementors use complicated software work streams. Many institutions use multiple software applications to mark up texts. The process used by the History of Medicine Division, National Library of Medicine is typical:

> I use Notetab with Daniel Pitti's markup scripts, modified for local use. We use James Clark's parsers and XT for HTML conversion (provided by Pitti at Rare Books School). I use a modified XSL stylesheet taken from the EAD Cookbook (eadcbs2) for creating the HTML. Conversion of legacy data is being performed by Electronic Scriptorium (Leesburg, Va.) using our Notetab system. We have not explored converting the print finding aids, yet. New finding aids will probably be created using a hybrid Notetab/XMetal process, and Alvin Pollock's MS Access report process for doing container lists.[29]

Yakel and Kim find that "EAD adopters had difficulty in selecting appropriate types of software and using them."[30] Some archives/special collections in their survey use as many as six encoding software applications.

Secondly, implementors have problems with server technology and delivery systems. Even archives with the resources to create custom, sophisticated encoding computer programs struggle with publishing issues. The University of Chicago Library, Department of Special Collections, for example, initially published its EAD finding aids in proprietary software that was only available on-site.[31] In a discussion on the Archives and Archivists Listserv initiated by my request for survey participants, Michele Combs describes the publishing quandary:

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[28] *EAD (Encoded Archival Description) Help Pages—Implementor Listing*, 2007, http://www.archivists.org/ saagroups/ead/implementors.html, accessed 18 February 2007.

[29] "National Library of Medicine, History of Medicine Division," *EAD (Encoded Archival Description) Help Pages—Implementor Listing*, May 2004, http://www.archivists.org/saagroups/ead/implementors/ NationalLibraryofMedicineHistoryofMedicineDivision.html, accessed 18 February 2007.

[30] Yakel and Kim, "Adoption and Diffusion of Encoded Archival Description," 1434.

[31] "University of Chicago Library, Department of Special Collections," *EAD (Encoded Archival Description) Help Pages—Implementor Listing*, n.d., http://www.archivists.org/saagroups/ead/implementors/ UniversityofChicagoLibraryDepartmentofSpecialCollections.html, accessed 18 February 2007.

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> . . . What does one do with all these nice EAD files? They have to be delivered somehow, which raises an entire vista of questions such as: Will they be searchable? How? To what degree? Do we provide an alpha list? How do we automate that? Do we provide a subject listing? How do we automate that? Do we need to spend a lot of money buying some XML-aware database? Do we need to provide a printer-friendly format? If so, what—PDF, stripped-down Word, etc.? Etc. etc. etc. While the cost in time and money of converting paper finding aids is substantial, the question of delivery can be intimidating, particularly to small institutions and/or those without in-house technical expertise.[32]

A review of the EAD Implementors Listings reveals patterns that might shed light on solutions for nonimplementors. The most pervasive pattern among the implementors is the use of outside resources. A number of institutions use outside consultants. The Newberry Library, for example, used consultants to set up specialized macros for encoding.[33] At the Utah State Historical Society:

> Using grant funds, we hired two consultants experienced in EAD theory and practice. They advised us about how to implement EAD and suggested work processes. We then developed processes that fit our requirements. A computer-literate project archival technician, with little training, carried out these steps.[34]

Other institutions, such as Syracuse University Special Collections Research Center, plan to outsource parts of the EAD encoding process. "At present, all work is done in-house. To date we have converted or generated some 140 finding aids ranging in size from 6k to 670k. To speed things up, we are exploring contracting out a large data set to a local company, Amcon Research, for OCR and tagging to our specs."[35]

Many of the implementors' institutions are members of regional or subject-based EAD consortia that pool resources such as style sheets, best practices, workflow decisions, and standards. Several consortia provide training and server space. Even those outside a consortium draw on its expertise. Old Dominion University,

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[32] Michele R. Combs, *Archives and Archivists List*, 8 February 2007.

[33] "The Newberry Library," *EAD (Encoded Archival Description) Help Pages—Implementor Listing*, n.d., http://www.archivists.org/saagroups/ead/implementors/TheNewberryLibrary.html, accessed 18 February 2007.

[34] "Utah State Historical Society," *EAD (Encoded Archival Description) Help Pages— Implementor Listing*, n.d., http://www.archivists.org/saagroups/ead/implementors/UtahStateHistoricalSociety.html, accessed 18 February 2007.

[35] "Syracuse University Special Collections Research Center," *EAD (Encoded Archival Description) Help Page—Implementor Listing*, n.d., http://www.archivists.org/saagroups/ead/implementors/SyracuseUniversitySpecialCollectionsResearchCenter.html, accessed 18 February 2007.

for instance, adapted the EAD template created at Duke University, a member of the North Carolina Encoded Archival Description (NCEAD) consortium.[36]

Many of the implementors on this list are large institutions. Size of institution is frequently cited as a predictor of whether an institution will be more likely to adopt innovation.[37] It might follow that consortium membership would give a small archives the same benefits as a large institution, that is, having a large pool of resources to draw on. However, Yakel and Kim find that belonging to a consortium did not make it more likely that small archives would adopt EAD. They find that institutions with at least four archivists have a higher probability of adopting EAD than institutions with fewer than four archivists, whether or not that institution belongs to a consortium.[38]

M e t h o d o l o g y

The issues raised in literature and in discussions with archivists form the basis for my survey, which presented questions on background, problems, costs, expertise, workflow, and solutions. The subjects covered include perception of EAD complexity and cost, workflow details, degree of institutional support, familiarity with authoring software, and availability of technical resources. (See Appendix A.)

To increase the chances that respondents would answer the survey in a timely manner, it primarily asked closed questions. Two questions had "Other (please describe)" options. The final question in the survey was an open-ended comment on barriers to EAD implementation. I pretested the survey on an archivist and a librarian and made minor modifications based on their comments.

In February 2007, I sent a message to the Archives and Archivists Listserv of the Society of American Archivists and the Encoded Archival Description Forum at the Library of Congress requesting participants for a study about barriers to EAD implementation.[39] In March, Solveig DeSutter, the SAA director of education, contacted 37 people who had taken the SAA EAD workshop in 2004 and 2005 and are not listed on the EAD Implementors website to ask for their participation in this study.

Sixteen archivists and librarians responded, completing 13 surveys electronically and 3 in a telephone interview. The sample is composed of staff

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[36] "Old Dominion University," *EAD (Encoded Archival Description) Help Pages—Implementor Listing*, n.d., http://www.archivists.org/saagroups/ead/implementors/OldDominionUniversity.html, accessed 18 February 2007.

[37] A. M. Kennedy, "The Adoption and Diffusion of New Industrial Products," *European Journal of Marketing* 17 (1983): 31–88.

[38] Yakel and Kim, "Adoption and Diffusion of Encoded Archival Description," 1435.

[39] In April 2008 there were 2,962 subscribers to the Archives and Archivists List. The number of active subscribers is unknown. Email from Kerwin R. So, Archives and Archivists List Coordinator to author, 28 April 2008.

members at institutions that wanted to implement EAD but were experiencing problems doing so. Several institutions found the obstacles severe enough to abandon their plans after encoding one finding aid. Others were slowly implementing EAD despite barriers.

Findings

The respondents worked in universities, museums, and other settings (see Figure 1) in the western, southern, mid-Atlantic, and northeastern regions of the United States. (See Figure 2.)

Twelve of the institutions report employing fewer than 2 full-time professional archivists. The other institutions employ from 3 to 6 archivists. (See Figure 3.)

Respondents have all made some progress in planning for or implementing EAD. (See Figure 4.) All respondents have a website for their archives. Four respondents report that their institutions had set up an EAD website. Another 3 publish their finding aids on a consortium's EAD website. Seven indicate that their institutions had implemented EAD. The years of implementation range from 1998 to 2006. All 3 of the institutions with 4 or more archivists have begun implementing EAD, supporting Yakel and Kim's findings.[40] Eleven respondents
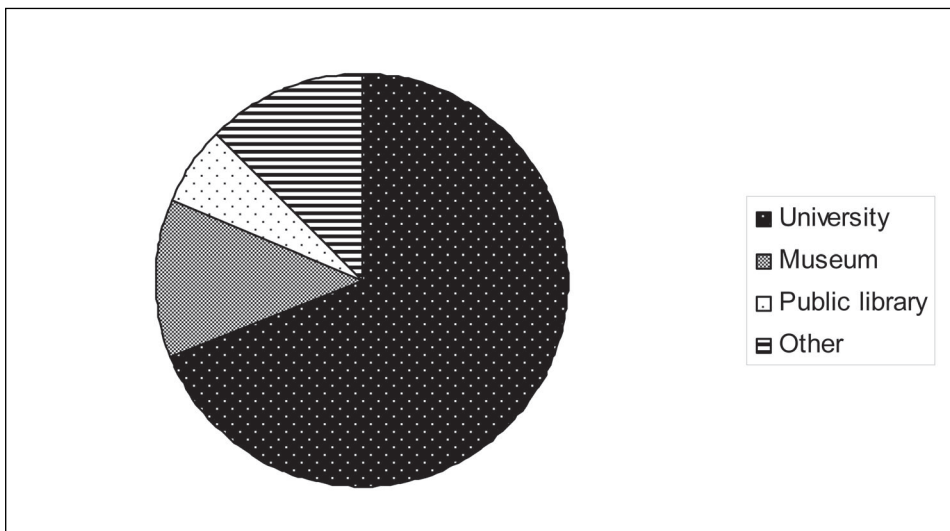

FIGURE 1. **Type of institutions represented by survey respondents.**

[40] Yakel and Kim, "Adoption and Diffusion of Encoded Archival Description," 1435.
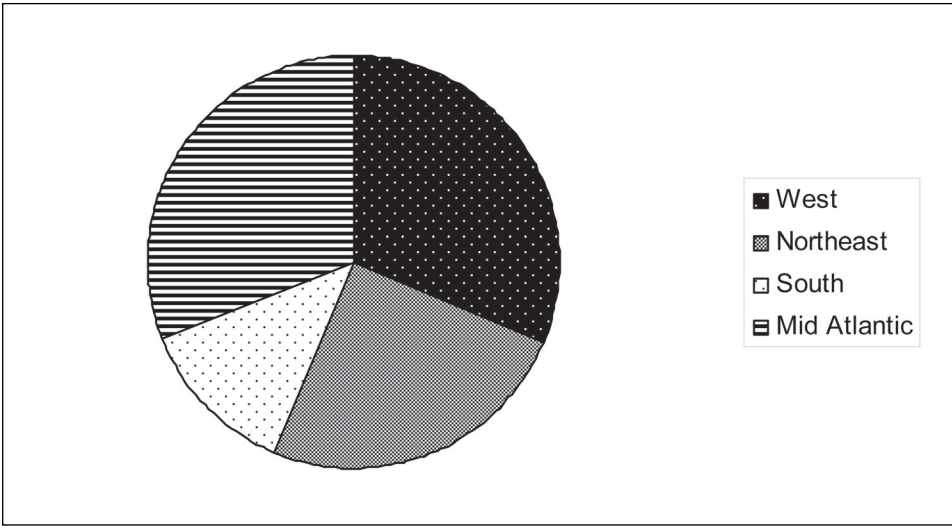
F I G U R E 2 . Location of institutions represented by survey respondents.
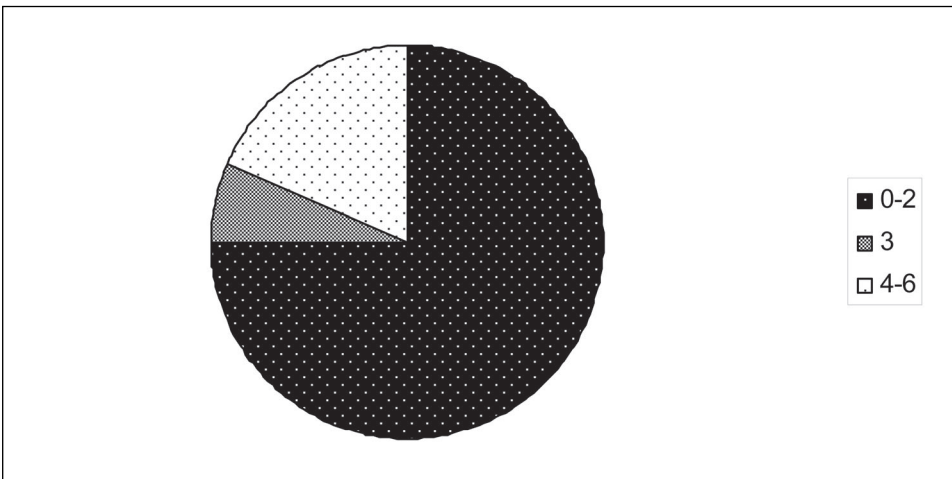

F I G U R E 3 . Number of archivists on staff of institutions represented by survey respondents.

have put their finding aids online in another format. Those who specified a format say their finding aids are in HTML, Microsoft Word, PDF, or online catalogs. Two respondents have encoded more than 10% of their finding aids.

Despite the progress reported, all but 1 respondent encountered barriers while implementing EAD in areas ranging from staffing to workflow.
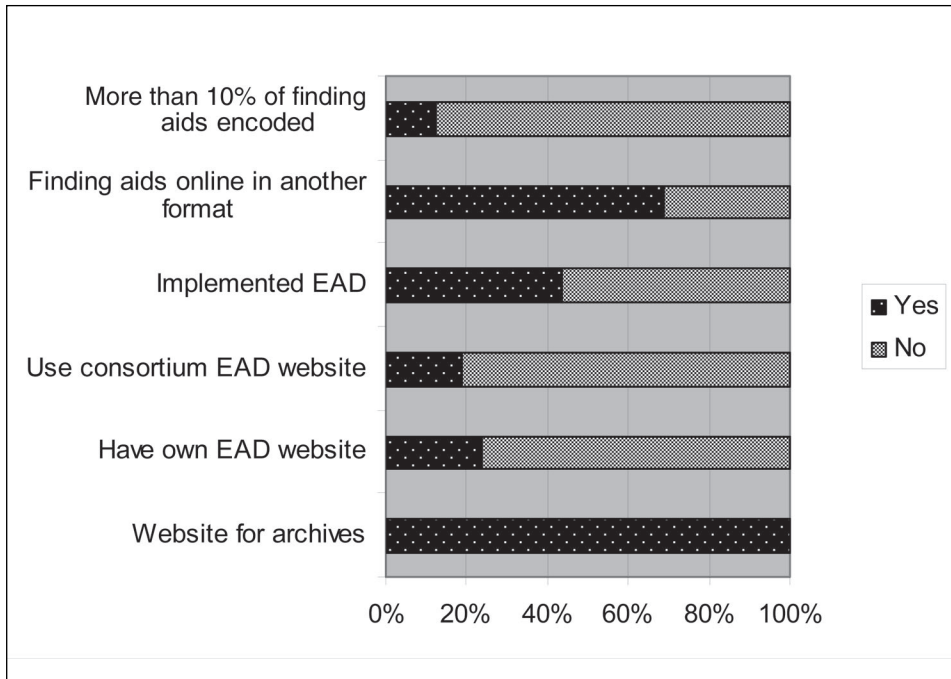
More than 10% of finding aids encoded
Finding aids online in another format
Implemented EAD
Use consortium EAD website
Have own EAD website
Website for archives

Yes
No

0% 20% 40% 60% 80% 100%

F I G U R E   4 .   **EAD implementation by survey respondents.**

Respondents most frequently select the barrier "lack of staff" (12 of 16 respondents). One respondent summarizes the majority of responses by putting three x's by this option, indicating that lack of staff are her three top barriers. Five of the 16 respondents cite "lack of a plan." One sees a causal link between "lack of staff" and "lack of a plan." She notes that a top barrier was, "[along] with lack of staff—lack of time; existing staff has many other demands and it is difficult to find enough focused time to devote to either implementing ourselves or coming up with a plan for alternative ways to implement" (Respondent 1).

Respondents also cite technology issues as significant obstacles to implementation. Eight respondents identify "lack of infrastructure/IT support" as a top barrier. One comments, "The server environment is probably our biggest barrier since our institution as a whole is short staffed in terms of ITS web support and non-ITS staff have limited access to servers and things beyond basic content editing" (Respondent 1). Another responds that a general lack of IT savvy within the archival community makes EAD hard for staff to grasp (Respondent 7). Few respondents agree that the complexity of EAD was a problem. Only 3 selected "perceived complexity of EAD for archivists to learn" as a top barrier to implementation. No one indicates that users' inability to

understand EAD is a barrier. Roth's findings that users do not know that they are viewing an EAD-encoded finding aid on a website may explain this.[41] The technical skills needed to encode a finding aid and publish it to a website where a user can view it have been treated as joined skills. However, this is not necessarily accurate. Although 6 respondents indicate that their staff lacks encoding expertise and 6 indicate that their staff lacks server expertise, these are not the same set of respondents. (See Figure 5.) Yakel and Kim point out that "Encoding and publishing finding aids are two separate operations requiring different skills and expertise."[42] One respondent concurs, "I can encode; I don't know how to deliver to the web" (Respondent 3). Half, or 8, of the respondents say their staff has the technical skill to do EAD encoding. Two others say that although their staff had been trained, additional training or practice would be necessary to understand EAD well enough to implement it (Respondents 1 and 4). Although 3 say that appropriate EAD training is not available, 10 say training is or probably is available. Only 7 institutions have server expertise, the ability to set up the components such as style sheets, SGML/XML/XLS/HTML parsers, and converters necessary for publishing EAD on the Web. Eight (50%) respondents indicate that lack of server technology expertise is a barrier to EAD implementation.
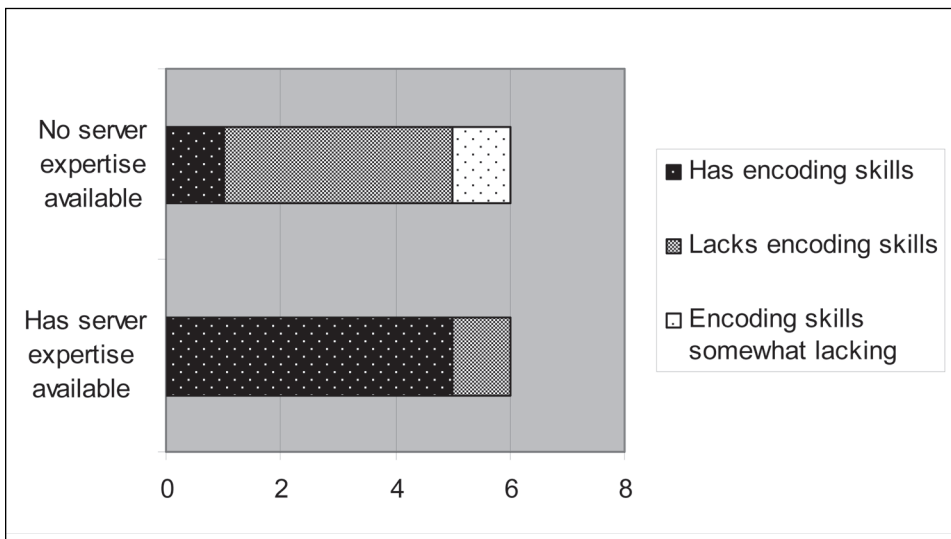

F I G U R E   5 .   **Server expertise/encoding skills of institutions represented by survey respondents.**

[41] Roth, "Serving Up EAD," 231.

[42] Yakel and Kim, "Adoption and Diffusion of Encoded Archival Description," 1434.

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In addition to technology issues, another key barrier is "Lack of institutional support," cited by 5 respondents. One respondent underlines the importance of institutional support. Respondent 7 says that she is unable to implement EAD although she has an implementation strategy, staff trained in EAD, staff with server technology training, a server set-up, and membership in an EAD consortium. She has, however, no support from her institution's administration. Similarly, another respondent notes that her institution views libraries merely as an expense, without any value (Respondent 6). Prioritizing EAD implementation is not possible when her day-to-day struggle is to gain support from her administrators for her library. Larger issues of technology also play a role in lack of institutional support for several respondents. Institutional support is important to facilitate the interdepartmental cooperation needed to publish EAD. This is difficult to obtain when the IT department does not appear to understand the library's mission (Respondent 6), when other staff do not understand the value of EAD (Respondent 10), or when administrators "view the Internet as a toy" (Respondent 7).

Given the concern of administrators and colleagues about the value and expense of EAD, it is not surprising that about a third (6 of 16 respondents) select expense as a top barrier to implementation, although only 3 indicate that EAD is considered too costly for their archives to implement. One comments that it is too expensive "only in terms of staff time" (Respondent 9). Only 5 respondents applied for a grant for EAD (either individually or as part of a consortium), and all of those who applied received one. Another institution plans to apply for a grant. Only two institutions did encoding after their grant funding ended, one commenting that they did only a small amount of encoding. It may be that EAD is too costly to do without a grant.

Workflow plans explain why implementation might be expensive and time consuming. Ten respondents with existing finding aids plan to augment, update, or rewrite existing finding aids before EAD encoding, although 2 of those indicate that they are doing minimal updating. (See Figure 6.) As for personnel to do the encoding, 4 plan to use student workers guided by archivists. Seven plan to use archivists and paraprofessional staff to encode. One plans to outsource all encoding. Two plan to use archivists and classified staff in addition to student workers or outsourced staff. Two plan to have only archivists do the encoding. (See Figure 7.) This contrasts with Yakel and Kim's finding that most adopters have archivists do the encoding, which they postulate might be the reason the process is going slowly for many institutions.[43] Although respondents appear to be cautious in their encoding plans,

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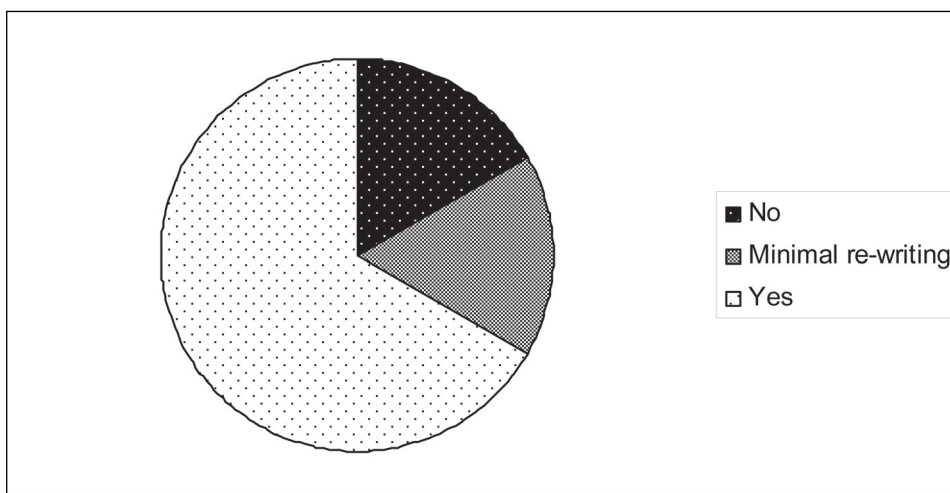[43] Yakel and Kim, "Adoption and Diffusion of Encoded Archival Description," 1430.

F I G U R E 6 .   **Do survey respondents plan to rewrite existing finding aids?**
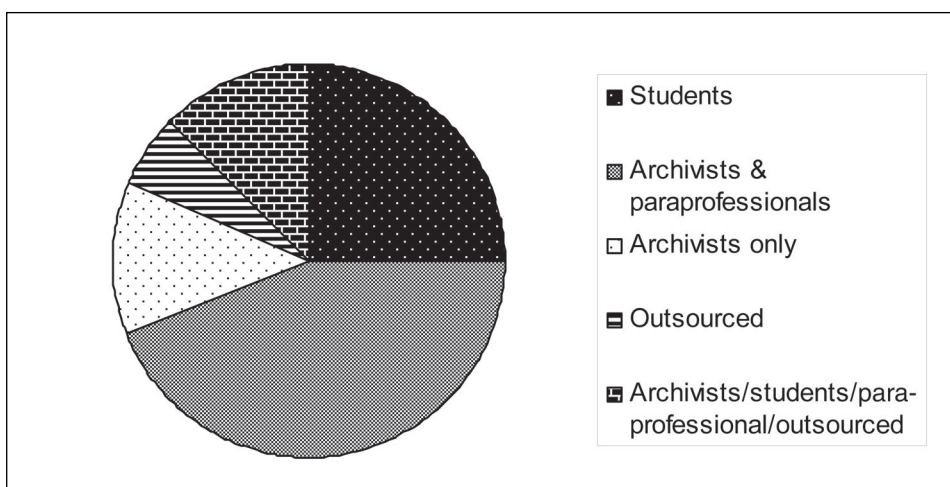

F I G U R E 7 .   **Encoding staff of survey respondents.**

they are aware of current EAD software. Thirteen indicate that they are familiar with free EAD/XML authoring software such as Archivist's Toolbox or Archon. Several note that they feel they should investigate these software packages further.[44]

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[44] Although I listed two examples of free EAD authoring software in my survey, many more are available to archivists. A discussion of other software can be found in Katherine M. Wisser, "EAD Tools Survey," published at www.archivists.org/saagroups/ead/EADToolsSurvey.pdf, accessed August 2005.
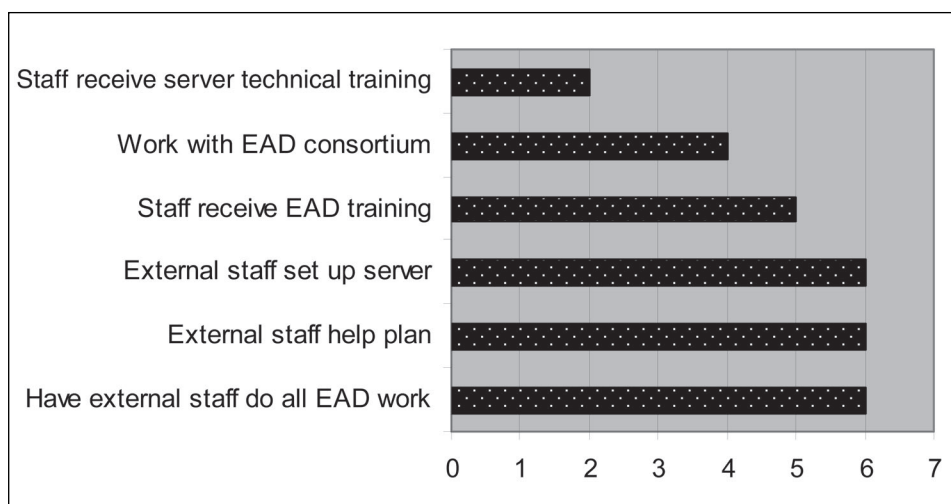
F I G U R E 8 .   Solutions identified by survey respondents.

Respondents identify problems including lack of staffing, lack of support, technology, cost, and workflow and see solutions consistent with these problems as helpful to their institutions in implementing EAD. (See Figure 8.) Respondents give equal weight to three solutions, with 6 respondents each selecting "having consultants assist you in developing an implementation strategy," "having consultants or a consortium set up the server," and "having consultants handle all aspects of the implementation (grant writing; developing an implementation strategy and workflow; developing EAD standards; developing, hiring, outsourcing, or training staff; setting up the server environment)." Five respondents say that "having staff receive EAD training" could help their implementation, including 2 who indicate that appropriate training for their staff is available. Another respondent notes that appropriate training is available but that it is too expensive. Perhaps cost is preventing institutions from sending their staff to training as well. In-house training would seem to be the obvious answer. Many institutions have now migrated their MARC training from external classes to internal one-on-one training. However, training methodology for EAD has never made that leap.[45] One respondent who tried to set up an internal EAD training program found that her institution's staff did not understand cataloging standards and technology well enough to understand EAD. This may explain why the lowest ranked option is "having staff receive server technology training" (2 respondents). A more popular option that could provide technical and institutional support as well as

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[45] Yakel and Kim, "Adoption and Diffusion of Encoded Archival Description," 1430.

reduce cost is "working with an EAD consortium," chosen by 4 respondents as helpful to their institution. Yakel and Kim, however, comparing EAD adopters versus nonadopters, find that consortium membership does not help small archives implement EAD.[46] It could be that consortium membership does not determine whether someone would adopt EAD, but membership still might be helpful to institutions trying to implement EAD. This is plausible in light of the comment made by the only respondent who notes no barriers to implementation at her institution saying, "The consortium worked very well" (Respondent 16).

To address problems of technology and coding, respondents suggest having a comprehensive metadata strategy across all collections and having more archival positions. One respondent explains that she had not implemented EAD because "The perfect is the enemy of the good." She could either publish her finding aids in EAD (the perfect) or publish them in other formats (the good) and still have time to do her other job duties (Respondent 2).

Discussion

The survey identifies three major barriers and ways to remove them. Practioners identify the primary barrier as lack of staff. EAD is a time-consuming process. Initial planning, designing a workflow, choosing software for encoding, rewriting or updating finding aids, setting up an EAD server, and then encoding and publishing finding aids all require expenditures of staff time. Respondents say that these tasks might be possible if they could reserve a block of time, but their other duties preclude this. As one respondent says, "It is not just finding the time to do the encoding, it is finding the uninterrupted time to think out how to do the encoding."[47]

Given concern with staffing levels displayed by respondents, it is not surprising that respondents cite use of outside consultants as the single most helpful factor in implementing EAD. Eleven respondents identify as helpful the use of consultants either in the implementation phase, in setting up the server environment, or in handling all aspects of EAD implementation. Surprisingly few respondents had applied for EAD grants, which could fund project staff. This may reflect a lack of awareness of EAD grant opportunities.

The second barrier identified in the survey is the middleware gap. Archivists appear to know how to mark up finding aids in EAD, but do not know how to deliver that content to a website. Yakel and Kim find that EAD nonadopters are just as likely to have server/middleware technical support as adopters are.[48] While

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[46] Yakel and Kim, "Adoption and Diffusion of Encoded Archival Description," 1432.

[47] This is a paraphrasing of a telephone interview with Respondent 6.

[48] Yakel and Kim, "Adoption and Diffusion of Encoded Archival Description," 1432.

this may not be what keeps people from adopting EAD, it may be what keeps them from implementing it once they have decided to adopt it.

There are several possible solutions to closing the middleware gap. One is to improve staff knowledge of server technologies by expanding standard EAD training to teach the server technology needed to publish EAD-encoded finding aids on the Web. An example of such a course is Daniel Pitti's class, Publishing EAD Finding Aids, taught at the University of Virginia's Rare Book School. However, since respondents ranked "having staff receive server technology training" lowest in my survey, only a small number of archives may be interested in this training.

A solution requiring less server knowledge from archivists is the use of software to reduce or eliminate the server customization required to host EAD. One such software is a promising new version of Archon, recently released by Christopher Prom and his colleagues. This all-in-one software can be used to encode finding aids; output them in several file formats such as HTML, XML, and php; and provide a server-friendly relational database and search engine.[49] Testing is necessary to determine the effect of the new version of Archon on an institution's ability to implement EAD successfully. While Archon is designed to minimize the expertise required to mount EAD-encoded finding aids online, research is needed to see whether archivists have the necessary skills to utilize it. Archon's acceptance by the nonarchives staff members who control archives servers needs to be studied as well.

Another solution congruent with responses to this survey is the use of outside consultants to set up server environments. Fox points out this may be the best use of consultants—dealing with technology issues.[50] Consultants may recommend that existing server software be utilized for EAD hosting or may suggest that Archon software be used instead.

The third and final barrier to implementation identified in this survey is the plan of many archives to rewrite their finding aids before implementing EAD. The drive to get finding aids up to *DACS* or current archival standards may make it impossible to get finding aids encoded at all. An alternate plan is to encode and publish finding aids in two rounds. The first round is to encode finding aids up to the basic EAD record guidelines as defined by the Library of Congress's "Minimum Recommended Finding Aid Elements."[51] Only finding aids that do not contain these basic elements need to be updated. A second

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[49] Christopher Prom, Christopher A. Rishel, Scott W. Schwartz, and Kyle J. Fox, "A Unified Platform for Archival Description and Access," in *JCDL '07: Proceedings of the 2007 Conference on Digital Libraries* (New York: ACM Press, 2007), 157–166.

[50] Fox, Implementing Encoded Archival Description, 334.

[51] "Appendix A: Minimum Recommended Finding Aid Elements," *The EAD Application Guidelines for Version 1.0.*

round of encoding could add other levels of description to these basic EAD records and update all elements to the repository's current standards, as needed. The Special Collections Research Center, Earl Gregg Swem Library, at the College of William and Mary adopted this procedure, following my recommendations as their consultant.

C o n c l u s i o n

As an archival standard, EAD holds the significant promise of improving online navigation and searching qualities of archival description. However, a standard no one is able to adopt is of limited value, so the professional community must explore and understand the factors that make implementation of EAD difficult. Some of these factors can be identified and measured objectively, such as the larger staff size of institutions of EAD adopters versus nonadopters. Other equally important factors are subjective, such as the perception of half of the archivists in this survey that lack of infrastructure support at their institutions significantly impedes EAD implementation.

Archivists and librarians at the Wisconsin Historical Society and the University of Wisconsin-Madison suggest that the two main barriers to implementing EAD are institutions' lack of expertise in server technology and the archivists' desire to rewrite legacy finding aids before encoding them. The results of this survey support this opinion, which ties into the primary finding of this survey—it is unrealistic to implement EAD with existing staffing levels. With staff workloads already pushed to the limit, it is especially impractical for an institution to expect to implement EAD if that institution requires every encoded finding aid to be fully compliant with *Describing Archives: A Content Standard* (*DACS*). This is particularly true at smaller archival repositories.

However, increased staffing alone will not ensure successful implementation because EAD is a technology-dependent standard. A significant gap still exists between the technological expertise needed to implement EAD and the computer skills of many archivists. What resources archivists use to bridge these gaps will decide the future of EAD. Either we can do this by expanding our internal resources through increased staffing, increased technical training, and the use of less complicated EAD software, or we can use outside resources such as consortia and consultants. While the survey suggests that many archivists feel the best solution is to use consultants for most aspects of EAD implementation, the same forces that limit archival staff— funding and lack of institutional support for EAD—also limit the ability of archivists to hire consultants to implement EAD. A better strategy is for archives to use consultants sparingly as part of a proactive plan to incorporate Encoded Archival Description into the core work of archivists. Archivists cannot afford to let their technological skills stagnate while the world of archival description continues to evolve at an ever-quickening rate.

A p p e n d i x   A :   B a r r i e r s   t o   E A D   I m p l e m e n t a t i o n   S u r v e y

1. Background
    a. Approximately how many archivists are on your staff?
    b. Does your archives have a Web site?
    c. If your institution has implemented EAD, when did that occur?
    d. If your institution has not implemented EAD, have you put your find-ing aids online in another format?
    e. Approximately what percentage, if any, of your repository's finding aids are encoded in EAD?

2. What are the top three barriers to your institution implementing EAD? (mark three of the following)

    ____lack of staff

    ____expense

    ____lack of implementation plan (where do we start?)

    ____lack of infrastructure/IT support

    ____lack of institutional support

    ____perceived complexity of EAD for archivists to learn

    ____perceived complexity of EAD for patrons to use

    ____other (please describe) _____

3. Costs
    a. Is EAD viewed as too costly for your archives to implement?
    b. Has your institution ever applied for a grant for EAD implementation?
    c. Did your institution ever receive a grant for EAD implementation?
        1. If so, did you encode any finding aids in EAD before the grants?
        2. After the granting period was over?

4. Resources
    a. Does your staff lack the technical expertise to encode finding aids in EAD?
    b. If so, is appropriate training available?
    c. Does your institution have staff that can set up the components neces-sary for publishing EAD on the Web (style sheets, SGML/XML/XLS/HTML parsers and converters)?
    d. If not, is lack of this server technology expertise a barrier to EAD implementation?

5. Workflow
   a. Do you plan to augment, update or re-write existing finding aids before you encode them in EAD?
   b. When you implement EAD, who do you plan to have encode your finding aids?

      ____only archivists

      ____archivists and classified (paraprofessional) staff

      ____student workers, guided by archivists

      ____an outside agency
   c. Are you familiar with free software such as Archivist's Toolbox or Archon?
   d. Does your institution have an EAD finding aids website set up?

6. What would help your institution implement EAD? (mark all that apply)

   ____having consultants assist you in developing an implementation strategy

   ____having staff receive EAD training

   ____having staff receive server technology training

   ____having consultants or a consortium set up the server environment necessary for publishing EAD

   ____working with an EAD consortium

   ____having consultants handle all aspects of the implementation—grant-writing; developing an implementation strategy and workflow; developing EAD standards; hiring, outsourcing, or training staff; setting up the server environment

   ____other (please describe) _____

7. Additional comments on barriers to EAD implementation: